



C22  
CL21X series

## 金属化聚酯膜电容器(浸渍型) Metallized polyester film capacitor(Dipped)

### ■ 外形图 Outline Drawing

	Forming Lead Shapes			
	I	II	III	IV
	P > F		P < F	
	0mm < P-F < 3mm	3mm < P-F < 8mm	3mm < F-P < 5mm	0mm < F-P < 3mm
	F ± 0.8mm; A < 5.0mm; B=4.5 ± 0.5mm			

### ■ 特点

- 金属化聚酯膜,无感卷绕结构
- 体积小,自愈性好
- 阻燃性环氧粉末包封 (UL94/V-0)

### ■ 主要用途

- 用于开关电源、电子镇流器和变频器等中间电路直流滤波 (如: DC-Link、PFC等)

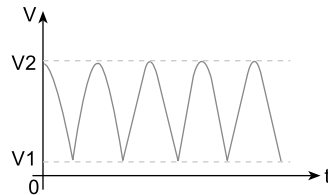
### ■ Features

- Metallized polyester film, non-inductive wound construction
- Small size and Excellent self-healing property
- Flame retardation epoxy resin coating (UL94/V-0)

### ■ Typical Applications

- As intermediate circuit capacitors for SMPS, electronic ballast, inverter (i.e. DC-link, DC-filter and P.F.C)

$\alpha$  : The series product is only recommended to use in DC-filter or DC-blocking circuits. It means the voltage applied to the capacitors must be unidirectional ripple voltage. The typical voltage curve is as follows reference. If you have any questions for this note, please feel free to contact with our technical engineer.



$$\text{Here: } V_1 \geq 0, V_2 \leq U_R, V_{rms} = (V_2 - V_1) \div \sqrt{2}, I_{rms} = 2\pi f \times C \times (V_2 - V_1) \div \sqrt{2}$$

$U_R$  is the rated voltage of the capacitor

### ■ 技术要求 Specifications

引用标准 Reference Standard	GB/T 7332 (IEC 60384-2)				
气候类别 Climatic Category	55/105/21				
额定温度 Rated Temperature	85°C				
工作温度范围 Operating Temperature Range	-55°C ~ 105°C (+85°C to +105°C: decreasing factor 1.25% per °C for $U_R$ )				
额定电压 Rated Voltage	250V, 400V/450V, 520V, 630V				
电容量范围 Capacitance Range	0.010 $\mu$ F ~ 10.0 $\mu$ F				
电容量偏差 Capacitance Tolerance	$\pm 5\%$ (J), $\pm 10\%$ (K), $\pm 20\%$ (M)				
耐电压 Voltage Proof	1.6 $U_R$ ( 5s )				
损耗角正切 Dissipation Factor	$\leq 0.8\%$ ( 20°C , 1kHz )				
绝缘电阻 Insulation Resistance	R $\geq 30\,000\,M\Omega$ , $C_N \leq 0.33\mu F$ RC <sub>N</sub> $\geq 5\,000s$ , $C_N > 0.33\mu F$ (20°C , 100V, 1min)				
最大脉冲爬升速率 Maximum Pulse Rise Time(dV/dt): 若实际工作电压 U 比额定电压 $U_R$ 低, 电容器可工作在更高的 dV/dt 场合, 这样 dV/dt 允许值应为右表值乘以 $U_R/U$ 。 If the working voltage(U) is lower than the rated voltage( $U_R$ ), the capacitor can be worked at a higher dV/dt. In this case, the maximum allowed dV/dt is obtain by multiplying the right value with $U_R/U$ .	$U_R$ (V)	dV/dt (V/ $\mu$ s)			
		P=7.5	P=10.0	P=15.0	P=22.5
	250	80	60	50	30
	400/450	150	120	100	50
	520	200	180	150	80
630	350	300	200	100	

产品编码说明 Part number system

■ 18位产品代码如下：

The 18 digits part number is formed as follow:

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
C	2	2															

第1~3位	型号代码 C22=CL21X	Digit 1 to 3	Series code C22=CL21X
第4~5位	直流额定电压 2E=250V 2G=400V 2S=450V 2T=520V 2J=630V	Digit 4 to 5	DC rated voltage 2E=250V 2G=400V 2S=450V 2T=520V 2J=630V
第6~8位	标称容量 举例：103=10 × 10 <sup>3</sup> pF=0.01μF	Digit 6 to 8	Rated capacitance value For example: 103=10 × 10 <sup>3</sup> pF=0.01μF
第9位	容量偏差 J= ± 5% K= ± 10% M= ± 20%	Digit 9	Capacitance tolerance J= ± 5%,K= ± 10%,M= ± 20%
第10位	引线脚距P 3=7.5mm 4=10.0mm 6=15.0mm 9=22.5mm	Digit 10	Pitch 3=7.5mm 4=10.0mm 6=15.0mm 9=22.5mm
第11位	内部特征码	Digit 11	Internal use
第12~15位	引线加工和包装代码	Digit 12 to 15	Lead form and packaging code
第16~18位	内部特征码	Digit 16 to 18	Internal use

■ Table 1 引线加工和包装代码 lead form and packaging code

第 12 位 Digit 12		第 13 位 Digit 13		第 14 位 Digit 14		第 15 位 Digit 15	
代码 Code	说明 explanation	代码 Code	说明 explanation	代码 Code	说明 explanation	代码 Code	说明 explanation
A	弹带包装 ammo-pack	2	F=5.0mm	1	表示弯脚 kinked	A	产品在连续的两个载带孔之间 each cap. between two consecutive holes P3=12.7mm,H=20.0mm (For pitch=7.5mm)
		3	F=7.5mm			E	P3=25.4mm;H=20.0mm (For pitch=10.0/15.0mm)
		4	F=10.0mm				(Detail information refer to pag 18)
6	F=15.0mm						
F	引线成型 lead kinked	2	F=5.0mm	0	B=4.5mm (the length of B)	0	B 的长度偏差 ± 0.5mm B Length tolerance ± 0.5mm
3	F=7.5mm						
4	F=10.0mm						
6	F=15.0mm						
Y	直脚 straight lead “Y” in the figure above	代码 Code	说明 explanation			0	引线长度偏差 ± 0.5mm Length tolerance ± 0.5mm
		45	引线长度 4.5mm lead length 4.5mm				

第 12-15 位代码为 “C000” 表示标准的引线长度 ( 20mm ~ 30mm )  
Digit 12-15 code “C000” means standard lead length ( 20mm ~ 30mm )



■ 外形尺寸 Dimensions ( mm )

小型化 Miniature version

250Vdc						
C <sub>N</sub> (μF)	W max	H max	T max	P	d	Part number
0.22	9.8	7.9	4.0	7.5	0.5	C222E224-3S****+++
0.27	9.8	8.8	4.1	7.5	0.5	C222E274-3S****+++
0.33	9.8	9.1	4.5	7.5	0.5	C222E334-3S****+++
0.47	9.8	11.4	5.0	7.5	0.5	C222E474-3S****+++
0.56	9.8	12.9	5.1	7.5	0.5	C222E564-3S****+++
0.68	9.8	13.4	5.6	7.5	0.5	C222E684-3S****+++
0.82	9.8	13.9	6.1	7.5	0.5	C222E824-3S****+++
1.00	9.8	14.5	6.7	7.5	0.5	C222E105-3S****+++
0.33	12.3	7.9	4.1	10.0	0.6	C222E334-4S****+++
0.47	12.3	9.6	4.2	10.0	0.6	C222E474-4S****+++
0.56	12.3	9.9	4.7	10.0	0.6	C222E564-4S****+++
0.68	12.3	10.3	5.1	10.0	0.6	C222E684-4S****+++
0.82	12.3	10.8	5.5	10.0	0.6	C222E824-4S****+++
1.00	12.3	11.3	6.1	10.0	0.6	C222E105-4S****+++

520Vdc						
C <sub>N</sub> (μF)	W max	H max	T max	P	d	Part number
0.033	9.8	7.7	3.9	7.5	0.5	C222T333-3S****+++
0.047	9.8	8.8	4.1	7.5	0.5	C222T473-3S****+++
0.068	9.8	9.4	4.8	7.5	0.5	C222T683-3S****+++
0.10	9.8	10.8	5.8	7.5	0.5	C222T104-3S****+++
0.15	9.8	11.9	7.0	7.5	0.5	C222T154-3S****+++
0.068	12.3	8.7	4.0	10.0	0.6	C222T683-4S****+++
0.10	12.3	9.9	4.5	10.0	0.6	C222T104-4S****+++
0.15	12.3	10.7	5.3	10.0	0.6	C222T154-4S****+++
0.22	12.3	13.3	6.0	10.0	0.6	C222T224-4S****+++
0.33	12.3	14.6	7.3	10.0	0.6	C222T334-4S****+++

400Vdc/450Vdc <sup>#</sup>						
C <sub>N</sub> (μF)	W max	H max	T max	P	d	Part number
0.047	9.8	6.9	3.7	7.5	0.5	C222G473-3S****+++
0.068	9.8	7.8	4.0	7.5	0.5	C222G683-3S****+++
0.082	9.8	8.7	4.0	7.5	0.5	C222G823-3S****+++
0.10	9.8	9.0	4.4	7.5	0.5	C222G104-3S****+++
0.12	9.8	9.3	4.7	7.5	0.5	C222G124-3S****+++
0.15	9.8	10.8	5.1	7.5	0.5	C222G154-3S****+++
0.18	9.8	11.2	5.5	7.5	0.5	C222G184-3S****+++
0.22	9.8	11.8	6.0	7.5	0.5	C222G224-3S****+++
0.27	9.8	12.4	6.6	7.5	0.5	C222G274-3S****+++
0.10	12.3	8.4	3.8	10.0	0.6	C222G104-4S****+++
0.12	12.3	8.7	4.0	10.0	0.6	C222G124-4S****+++
0.15	12.3	9.0	4.4	10.0	0.6	C222G154-4S****+++
0.18	12.3	9.4	4.7	10.0	0.6	C222G184-4S****+++
0.22	12.3	10.3	4.9	10.0	0.6	C222G224-4S****+++
0.27	12.3	10.8	5.4	10.0	0.6	C222G274-4S****+++
0.33	12.3	12.3	5.4	10.0	0.6	C222G334-4S****+++
0.47	12.3	13.9	6.6	10.0	0.6	C222G474-4S****+++
0.68	12.3	16.8	7.4	10.0	0.6	C222G684-4S****+++
0.82	12.3	17.5	8.2	10.0	0.6	C222G824-4S****+++
1.00	12.3	18.4	9.1	10.0	0.6	C222G105-4S****+++

- 备注: 1. “-”表示容量偏差。 “-”=capacitance tolerance code, M=±20%,K=±10%,J=±5%  
 2. “\*\*\*\*”表示引线加工和包装代码(见table 1)。“\*\*\*\*”=lead form and packaging code (refer to table 1)  
 3. “#”当额定电压为450Vdc时,第4~5位是2S。  
 “#” when the rated voltage is 450Vdc,the digit 4~5 is 2S.

■ 外形尺寸 Dimensions ( mm )

250Vdc						
C <sub>N</sub> (μF)	W max	H max	T max	P	d	Part number
0.10	9.8	7.7	4.0	7.5	0.5	C222E104-30****++
0.15	9.8	8.3	4.5	7.5	0.5	C222E154-30****++
0.22	10.0	9.9	4.9	7.5	0.5	C222E224-30****++
0.33	10.0	10.4	5.7	7.5	0.5	C222E334-30****++
0.47	10.0	11.8	6.3	7.5	0.5	C222E474-30****++
0.68	10.0	13.9	6.9	7.5	0.5	C222E684-30****++
1.0	10.0	15.3	8.4	7.5	0.5	C222E105-30****++
0.33	12.5	9.0	5.2	10.0	0.6	C222E334-40****++
0.47	12.5	10.8	5.4	10.0	0.6	C222E474-40****++
0.68	12.5	11.7	6.3	10.0	0.6	C222E684-40****++
1.0	12.5	14.4	7.4	10.0	0.6	C222E105-40****++
1.5	12.5	16.9	8.4	10.0	0.6	C222E155-40****++
2.2	12.5	19.7	9.5	10.0	0.6	C222E225-40****++
0.47	17.8	9.3	4.7	15.0	0.8	C222E474-60****++
0.68	17.8	10.0	5.4	15.0	0.8	C222E684-60****++
1.0	17.8	12.0	6.5	15.0	0.8	C222E105-60****++
1.5	17.8	14.2	7.2	15.0	0.8	C222E155-60****++
2.2	17.8	16.6	8.0	15.0	0.8	C222E225-60****++
3.3	17.8	19.3	9.2	15.0	0.8	C222E335-60****++
4.7	17.8	21.2	11.0	15.0	0.8	C222E475-60****++
1.0	25.5	10.9	5.5	22.5	0.8	C222E105-90****++
1.5	25.5	12.9	5.9	22.5	0.8	C222E155-90****++
2.2	25.5	13.9	6.9	22.5	0.8	C222E225-90****++
3.3	25.5	16.4	7.8	22.5	0.8	C222E335-90****++
4.7	25.5	18.8	8.7	22.5	0.8	C222E475-90****++
6.8	25.5	20.6	10.5	22.5	0.8	C222E685-90****++
10.0	25.5	23.0	12.9	22.5	0.8	C222E106-90****++

400Vdc/450Vdc <sup>#</sup>						
C <sub>N</sub> (μF)	W max	H max	T max	P	d	Part number
0.033	10.0	7.1	4.0	7.5	0.5	C222G333-30****++
0.047	10.0	7.1	4.0	7.5	0.5	C222G473-30****++
0.068	10.0	8.0	4.4	7.5	0.5	C222G683-30****++
0.10	10.0	9.7	5.1	7.5	0.5	C222G104-30****++
0.15	10.0	10.6	6.0	7.5	0.5	C222G154-30****++
0.22	10.3	12.1	6.7	7.5	0.5	C222G224-30****++
0.10	12.5	9.1	4.4	10.0	0.6	C222G104-40****++
0.15	12.5	9.7	5.1	10.0	0.6	C222G154-40****++
0.22	12.5	11.1	5.7	10.0	0.6	C222G224-40****++
0.33	12.5	13.2	6.2	10.0	0.6	C222G334-40****++
0.47	12.5	15.4	6.8	10.0	0.6	C222G474-40****++
0.68	12.5	16.8	8.2	10.0	0.6	C222G684-40****++
1.0	12.5	19.6	9.4	10.0	0.6	C222G105-40****++
0.22	17.8	10.3	4.9	15.0	0.8	C222G224-60****++
0.33	17.8	11.1	5.7	15.0	0.8	C222G334-60****++
0.47	17.8	13.1	6.1	15.0	0.8	C222G474-60****++
0.68	17.8	15.3	6.8	15.0	0.8	C222G684-60****++
1.0	17.8	17.2	8.7	15.0	0.8	C222G105-60****++
1.5	17.8	20.1	10.0	15.0	0.8	C222G155-60****++
2.2	17.8	22.3	12.2	15.0	0.8	C222G225-60****++
0.47	25.5	11.3	5.9	22.5	0.8	C222G474-90****++
0.68	25.5	13.3	6.3	22.5	0.8	C222G684-90****++
1.0	25.5	14.4	7.4	22.5	0.8	C222G105-90****++
1.5	25.5	16.9	8.3	22.5	0.8	C222G155-90****++
2.2	25.5	19.6	9.5	22.5	0.8	C222G225-90****++
3.3	25.5	21.8	11.7	22.5	0.8	C222G335-90****++

- 备注: 1. “-”表示容量偏差。 “-” =capacitance tolerance code, M= ± 20%,K= ± 10%,J= ± 5%  
 2. “\*\*\*\*”表示引线加工和包装代码(见table 1)。“\*\*\*\*”=lead form and packaging code (refer to table 1)  
 3. “#”当额定电压为450Vdc时,第4~5位是2S。  
 “#” when the rated voltage is 450Vdc,the digit 4~5 is 2S.



■ 外形尺寸 Dimensions ( mm )

520Vdc						
C <sub>N</sub> (μF)	W max	H max	T max	P	d	Part number
0.022	9.8	7.5	4.0	7.5	0.5	C222T223-30****+++
0.033	9.8	8.5	4.4	7.5	0.5	C222T333-30****+++
0.047	9.8	9.6	4.7	7.5	0.5	C222T473-30****+++
0.068	9.8	10.4	5.4	7.5	0.5	C222T683-30****+++
0.068	12.5	9.6	4.7	10.0	0.6	C222T683-40****+++
0.10	12.5	10.9	5.5	10.0	0.6	C222T104-40****+++
0.15	12.5	11.9	6.5	10.0	0.6	C222T154-40****+++
0.22	12.5	14.1	7.1	10.0	0.6	C222T224-40****+++
0.33	12.5	15.6	8.6	10.0	0.6	C222T334-40****+++
0.10	17.8	9.4	4.7	15.0	0.8	C222T104-60****+++
0.15	17.8	10.2	5.5	15.0	0.8	C222T154-60****+++
0.22	17.8	11.6	6.1	15.0	0.8	C222T224-60****+++
0.33	17.8	13.7	6.7	15.0	0.8	C222T334-60****+++
0.47	17.8	14.9	7.9	15.0	0.8	C222T474-60****+++
0.68	17.8	17.5	8.9	15.0	0.8	C222T684-60****+++
1.0	17.8	20.9	10.7	15.0	0.8	C222T105-60****+++
1.5	17.8	23.4	13.2	15.0	0.8	C222T155-60****+++
0.33	25.5	12.4	5.4	22.5	0.8	C222T334-90****+++
0.47	25.5	13.3	6.3	22.5	0.8	C222T474-90****+++
0.68	25.5	15.5	7.0	22.5	0.8	C222T684-90****+++
1.0	25.5	18.5	8.4	22.5	0.8	C222T105-90****+++
1.5	25.5	20.4	10.3	22.5	0.8	C222T155-90****+++
2.2	25.5	22.6	12.5	22.5	0.8	C222T225-90****+++

630Vdc						
C <sub>N</sub> (μF)	W max	H max	T max	P	d	Part number
0.010	9.8	7.6	4.1	7.5	0.5	C222J103-30****+++
0.015	9.8	7.6	4.1	7.5	0.5	C222J153-30****+++
0.022	9.8	8.1	4.6	7.5	0.5	C222J223-30****+++
0.033	9.8	9.2	5.1	7.5	0.5	C222J333-30****+++
0.047	9.8	10.5	5.5	7.5	0.5	C222J473-30****+++
0.068	9.8	11.9	6.2	7.5	0.5	C222J683-30****+++
0.10	9.8	13.1	7.7	7.5	0.5	C222J104-30****+++
0.047	12.5	9.6	4.6	10.0	0.6	C222J473-40****+++
0.068	12.5	10.3	5.3	10.0	0.6	C222J683-40****+++
0.10	12.5	11.2	6.5	10.0	0.6	C222J104-40****+++
0.15	12.5	13.9	6.9	10.0	0.6	C222J154-40****+++
0.22	12.5	15.3	8.3	10.0	0.6	C222J224-40****+++
0.10	17.8	10.6	5.1	15.0	0.8	C222J104-60****+++
0.15	17.8	12.5	5.5	15.0	0.8	C222J154-60****+++
0.22	17.8	13.5	6.5	15.0	0.8	C222J224-60****+++
0.33	17.8	14.8	7.8	15.0	0.8	C222J334-60****+++
0.47	17.8	16.3	9.2	15.0	0.8	C222J474-60****+++
0.68	17.8	19.1	10.4	15.0	0.8	C222J684-60****+++
1.0	17.8	22.8	12.6	15.0	0.8	C222J105-60****+++
1.5	17.8	25.8	15.6	15.0	0.8	C222J155-60****+++
0.22	25.5	11.2	5.7	22.5	0.8	C222J224-90****+++
0.33	25.5	12.2	6.7	22.5	0.8	C222J334-90****+++
0.47	25.5	14.3	7.3	22.5	0.8	C222J474-90****+++
0.68	25.5	15.7	8.7	22.5	0.8	C222J684-90****+++
1.0	25.5	20.0	9.8	22.5	0.8	C222J105-90****+++
1.5	25.5	22.2	12.1	22.5	0.8	C222J155-90****+++
2.2	25.5	24.9	14.8	22.5	0.8	C222J225-90****+++

备注: 1. “-”表示容量偏差。 “-”=capacitance tolerance code, M=±20%,K=±10%,J=±5%  
2. “\*\*\*\*”表示引线加工和包装代码(见table 1)。“\*\*\*\*”=lead form and packaging code (refer to table 1)

## X-ON Electronics

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